# MANAGEMENT PROBLEMS AND OPPORTUNITIES

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The management goals, objectives, and strategies for the Spring River Tributaries Watershed were developed using information collected from the Spring River Tributaries Watershed Assessment and Inventory (WAI) and direction provided by the MDC Strategic Plan, and the Fisheries Division Five Year Strategic Plan (1995-2000). Objectives and strategies were written for instream and riparian habitat, water quality, aquatic biota, recreational use, and hydrography. All goals are of equal importance, with objectives listed in prioritized order whenever possible. This plan includes only those activities and results the Fisheries Division of Missouri Department of Conservation can reasonably expect to achieve or influence during the next 25 years. Completion of these objectives will depend upon their status in overall regional and division priorities and the availability of human resources and funds.

## GOAL I: IMPROVE RIPARIAN AND AQUATIC HABITATS IN THE SPRING RIVER

### TRIBUTARIES WATERSHED.

Status: Problems affecting riparian and aquatic habitats include insufficient wooded riparian corridors, stream bank erosion, gravel dredging, and other point and nonpoint sources of pollution. Protecting and enhancing the riparian corridor is essential to obtaining quality aquatic habitats. A timbered stream corridor significantly influences many components of the stream ecosystem including stream bank stability, water quality, ground water absorption and recharge to the stream, amount of physical instream habitat, spatial and structural complexity of physical instream habitat, and the food web.

Objective 1.1: With the assistance of willing landowners, over a 25-year period, increase by 50% the proportion of streams with a timbered corridor width >100 feet and decrease by 75% the amount of unvegetated stream bank.

<u>Strategy</u>: Using the following list of prioritized watersheds management units, (developed through our evaluations of forest cover, losing streams, public ownership, point and nonpoint source pollution, and fish community data), direct our management efforts towards those watersheds of highest priority: (1) Warm Fork Spring River, (2) South Fork Spring River,

# (3) Myatt Creek.

- 1. Using videotapes, field investigations, aerial photography, and satellite imagery, document and update the current and future conditions of riparian corridors and stream banks. Future projects such as the Missouri Resource Assessment Partnership Land Cover Classification need to be encouraged in order to insure that adequate data is available that will allow efficient analysis of riparian conditions over time.
- 2. Utilizing state and federal assistance programs, such as the MDC-DNR incentive programs and educational efforts, implement riparian and aquatic habitat protection measures on streams with the cooperation of willing land owners.

GOAL II: IMPROVE SURFACE AND GROUND WATER QUALITY AND QUANTITY IN THE SPRING RIVER TRIBUTARIES WATERSHED.

Status: Little water quality or hydrologic data exists for the Spring River Tributaries Watershed. However existing data indicate that high fecal coliform levels, nutrient loading, and the potential disturbance of sediment and gravel budgets are the most severe threats to surface water quality.

Ground water has also experienced water quality problems relating to turbidity and high bacteria counts. It is from the ground water system that nearly all water for domestic use is obtained within the watershed. Poor land use practices, gravel dredging, large numbers of cattle, and runoff as well as sewage effluent associated with developed and urbanized areas all contribute to water quality problems of both surface water and ground water.

Objective 1.1: Assure that watershed streams meet or exceed state standards for water quality.

<u>Strategy</u>: Due to the connection between the surface water and ground water systems in the watershed, protection of surface waters, both permanent and intermittent, can also greatly contribute to the enhancement of ground water quality. Protecting riparian corridors will reduce surface runoff and provide stream bank and channel stability. Streams also need protection from other pollutants. Education of the citizenry and land owners on water quality issues and land stewardship is the best hope for improving water quality. Encouragement of appropriate agencies to enforce existing water quality laws is also required to obtain satisfactory water quality.

- 1. Through media contacts, personal contacts, literature development, and speaking engagements to groups such as area stream teams and land owners, inform the public of water quality issues and problems (e.g. karst topography, excessive siltation, animal waste runoff, gravel dredging, septic system failure etc.) and potential solutions to these problems.
- 2. Establish a structured water quality sampling program within the watershed in cooperation with the Missouri Department of Natural Resources and Stream Teams.
- 3. Assist with training and involvement of Stream Teams in water quality monitoring and advocacy in the Spring River Tributaries Watershed. This includes promoting such projects as storm drain stenciling and stream cleanups.
- 4. Encourage and assist with additional dye tracing studies within the watershed in order to further determine intrawatershed and interwatershed ground water movement as well as recharge area of selected springs within the watershed with an emphasis on publicly owned spring outlets.
- 5. Assist with enforcement of existing water quality laws by reviewing 404 permits, cooperating with other state and federal agencies to investigate pollution and fish kill reports, collecting water quality related data, and recommending measures to protect aquatic communities. Additional emphasis should be placed on losing streams.
- 6. Encourage the enforcement of existing water quality laws with an emphasis on losing streams.
- 7. Promote "greenways" in urban and residential areas i.e. West Plains and Thayer Missouri.
- 8. Encourage the entry of water quality data into a Geographic Information System (GIS) compatible format in order to facilitate effective data updating and analysis. This includes the creation of a 'Designated Use' data layer based on current Rule 10 CSR 20-7.031 of the Rules of Department of Natural Resources Division 20-Clean Water Commission Chapter 7-Water Quality, Tables G and H.

- 9. Cooperate with other Missouri Department of Conservation divisions to insure all department areas follow best management practices.
- Encourage limiting livestock access in riparian areas through education and/or incentive programs for willing private landowners.
- Objective 1.2: Establish a hydrologic data set for selected streams and springs within the watershed in order to provide for future analysis of surface water and ground water flows.
- <u>Strategy</u>: Priority for obtaining flow data should be placed on streams having urban areas within their drainages. Springs on public lands and flowing into stream reaches which have been shown to be significantly influenced by spring flow (refer to Habitat Conditions Section) should also be of high priority.
- 1. Encourage the establishment of a United States Geological Survey long term daily discharge gage station within the watershed with the highest priority given to the Warm Fork of the Spring River.
- 2. Design and initiate a flow study of selected streams and springs within the watershed using instantaneous flow measurements.

GOAL III: MAINTAIN THE ABUNDANCE, DIVERSITY, AND DISTRIBUTION OF AQUATIC BIOTA AT OR ABOVE CURRENT LEVELS WHILE IMPROVING THE QUALITY OF THE SPORT FISHERY IN THE SPRING RIVER TRIBUTARIES WATERSHED.

Status: An assemblage of 46 fish species, 5 naiad species, 8 crayfish species, and 45 families of benthic macro-invertebrates have been identified throughout the Spring River Tributaries Watershed. Major sport fish include bluegill, green sunfish, longear sunfish, smallmouth bass, largemouth bass, shadow bass. The Asiatic clam is the only exotic aquatic species currently found in the watershed. In addition, a total of 39 "species of conservation concern" are known to occur within the watershed. These include two fish species, one mussel species, and three crayfish species.

Objective 1.1: Maintain the diversity, abundance, and distribution of native non-sport fish and invertebrate communities at or above current levels.

<u>Strategy</u>: High priority should be placed on protecting state and federally listed species and unique community assemblages. Focusing enhancement and protective efforts on a few species can be effective in helping other species that share the same habitat. Detecting changes in faunal composition and abundance can be accomplished by conducting routine surveys of fish and invertebrate communities. Determining reasons for any changes will be more difficult since a variety of factors (e.g. interspecific and intraspecific competition, water quality, habitat condition, etc.) could be involved.

- 1. Assist with recovery efforts for any state or federally-listed rare or endangered species in the watershed.
- 2. Survey fish communities in the watershed every 10 years at historical sampling sites using standardized sampling techniques. Establish additional sampling sites as necessary with high priority given to Missouri Department of Conservation areas. Incorporate data into a Geographic Information System (GIS) in order to document changes in species diversity, abundance, and/or distribution.
- 3. Using a Geographic Information System (GIS), document locations and identify unique fish

assemblages associated with natural features and special habitats such as spring branches and marshes.

- 4. Develop criteria for identifying instream habitat needs (e.g., presence of listed species, extent of timbered stream corridor, size of stream, land use, soils, presence of permanent water, presence of sport fish, natural features, critical habitat, etc.) and develop a prioritized list of streams and stream reaches needing instream habitat restoration with priority given to public lands.
- 5. If appropriate, initiate research projects in cooperation with Missouri Department of Conservation Research Staff to investigate reasons for significant changes in faunal abundance and distribution and recommend corrective measures.
- 6. Coordinate with Missouri Department of Conservation Research Staff and other groups (i.e. University of Missouri, etc.) to conduct a survey of mussels on all fifth order and larger streams. Resurvey every 10 years to document changes in species abundance, diversity, and distribution.
- 7. Coordinate with Missouri Department of Conservation Research Staff and other groups (i.e., MDNR, University of Missouri, etc.) to conduct a survey of benthic invertebrates on all fifth order and larger streams. Resurvey every 10 years to document changes in species abundance, diversity, and distribution.
- Objective 1.2: Maintain or improve populations of sport fish while maintaining a stable and diverse fish community.
- <u>Strategy</u>: Proper management of sport fish populations will depend on obtaining adequate samples to determine the status of the fishery. Currently, insufficient sport fish survey data exists for the Spring River Tributaries Watershed which allows the setting of specific management objectives. Once adequate information is obtained, future management efforts will be directed toward setting appropriate fishing regulations, protecting and improving fish habitat, and stocking where appropriate.
- 1. Develop and initiate a regular sampling regime for high priority sport fishes to evaluate the status of their populations and provide baseline data for management decisions.
- 2. Complete fish habitat improvement projects at MDC-managed areas where sport fish habitat is limited.
- Objective 1.3: Prevent detrimental impacts on native fauna of the Spring River Tributaries Watershed by exotic aquatic species.
- <u>Strategy</u>: Controlling the introduction of exotic species into the state is the easiest way to prevent detrimental impacts to native fauna. Once a detrimental exotic species becomes established, research will be needed to seek ways to contain or eliminate the exotic from the system.
- 1. Continue Division participation in the Missouri Aquaculture Advisory Council (MAAC) and other organizations and advocate controlling the introduction of exotic fauna into state waters.
- 2. Monitor for potentially harmful exotic species (i.e., zebra mussel or grass carp). This can be performed during fish community surveys.
- 3. Educate anglers on the potential damaging effects of 'bait bucket' introductions to lake and stream communities.

GOAL IV: INCREASE PUBLIC AWARENESS AND PROMOTE WISE USE OF AQUATIC RESOURCES IN THE SPRING RIVER TRIBUTARIES WATERSHED.

Status: Little information exists regarding recreational use of the Spring River Tributaries. The Limited amount of public access and stream frontage in the watershed undoubtably is a limiting factor for recreational use.

Objective 4.1: Assure that sufficient stream frontage and access sites are developed at desirable locations to encourage public use and awareness of stream resources within the watershed.

<u>Strategy</u>: Assess the feasibility of limited development of selected stream frontage areas on existing public land within the watershed. Pursue the acquisition of areas of additional stream frontage adjacent to existing public lands as well as new.

- 1. Complete the development of Martin Access on the Warm Fork of the Spring River.
- 2. Assess sites for limited development of stream frontage areas on existing Missouri Department of Conservation Lands with efforts guided by the following initial priorities:
- a. Tingler Lake Conservation Area
- b. Warm Fork Conservation Area
- c. White Ranch Conservation Area
- d. Archie and Gracie VanDerhoef Memorial State Forest
- 3. Pursue the acquisition of additional frontage adjacent to existing Missouri

Department of Conservation Lands with efforts guided by the following initial priorities:

- 4. Pursue the acquisition of stream frontage along selected permanent streams based on availability and suitability which currently have limited or no public access.
- Objective 4.2: Increase awareness of stream recreational opportunities and appreciation of stream ecology and advocacy to a level that will encourage a widespread and diversified public interest in the Spring River Tributaries Watershed.

<u>Strategy</u>: Careful publicity which focuses on state and federally listed species as well as abundant local fish stocks can maintain and promote a continued appreciation of these types of resource elements. Providing opportunities for the public to learn about holistic stream ecology will, hopefully, create stream advocates.

1. Write fishing prospectus for public release to local media, describing the specific fisheries and angling opportunities of selected waters as data becomes available.
2. Provide the local and statewide media with timely "How to", "When to" articles and interviews that focus attention on activities and places such as: wade gigging, wade fishing, seasons, baits, methods and techniques for catching particular species, life histories, habitats and behaviors of various aquatic animals.
3. Publicize the acquisition, development and opening of new public access sites.
4. Conduct periodic recreational use surveys to determine levels of public use and satisfaction.
5. Emphasize stream ecology and good stream stewardship (utilizing brochures, aquaria, and stream tables where applicable) during presentations to school groups, youth organizations, and private landowner contacts.
6. Conduct outdoor youth events, such as Ecology Days at stream sites with field activities that demonstrate stream ecology and good stream stewardship.
7. Facilitate the development and activity of Stream Teams and other groups interested in adopting or otherwise promoting good stewardship and enjoyment of watershed streams.
8. Make public presentations that focus on the MDC Streams For The Future program.
9. Provide promotional, educational, and technical stream materials to groups, fairs and other special events.
10. Develop brochure which promotes best management practices within the watershed .